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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

MALDONADO, JULIO J

ART UNIT PAPER NUMBER

2823

DATE MAILED: 12 19 2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/971,953

Applicant(s)

ANDRY ET AL.

Examiner

Julio J. Maldonado

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 October 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 and 15-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Election/Restrictions

1. Applicant's election with traverse of claims 1-21 in Paper No. 6 is acknowledged. The traversal is on the ground(s) that "...simultaneous examination of all the claims will not present an undue burden on the examiner...". This is not found persuasive because the inventions are directed to a different invention and thus require a different search.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-7, 8-13 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applicant admitted prior art in the instant application in view of Schnur et al. (U.S. 5,079,600).

In reference to claims 1-4, 6, 7, 10, 12, 13, and 15-17, the admitted prior art (Figs. 1a-h) teaches the steps of providing a substrate (103); forming an insulation layer (101) on the substrate (103); forming a patterned polymer layer (109) by photolithography having the patterns on the insulation layer (101); etching the insulation layer (101) in accordance with the patterns of the patterned polymer layer (109) to create a patterned insulation layer; and stripping the patterned polymer layer (109) to expose the patterned insulation layer (page 1, line 10 – page 3, line 8). The prior art fails to teach providing an insulation layer with functional groups, wherein the functional

Art Unit: 2823

groups comprise OH; treating the insulation layer with a coupling agent reacting with the predetermined functional groups; treating the patterned insulation layer with a catalyst-containing solution comprising PdCl_2 ; and depositing copper on the patterned insulation layer. However, Schnur et al. (Figs. 1A-5B) in a related method to form a patterned conductive layer teach providing a silicon oxide layer, wherein the oxide layer comprise OH functional groups; treating the oxide layer with functional groups with a coupling agent, wherein said coupling agent reacts with said predetermined functional groups; treating the patterned insulation layer with a catalyst-containing solution; and depositing copper on the patterned insulation layer (column 6, line 46 – column 16, line 11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to provide an insulation layer with functional groups and treat the surface of said insulating layer with a coupling agent as taught by Schnur et al. in the patterning method of the prior art, since the functional groups on the insulation layer would provide anchorage to the coupling agent (column 10, lines 37 – 42), and this agent would also provide adherence for the catalytic agent (column 9, lines 28 – 32). It would also have been obvious to one of ordinary skill in the art to apply a catalytic solution as taught by Schnur et al. in the patterning method of the prior art, since this can cause deposition of the conductive layer on predetermined areas of the semiconductor device (column 7, lines 61 – 66).

In reference to claims 5 and 7, the prior art in combination with Schnur et al. substantially teach all aspects of the invention but fail to show the insulation layer having a thickness between about 1 nm and about 10 nm; and the patterned polymer

layer having a thickness between about 50 nm and about 100 nm. However, the selection of the claimed ranges is obvious because it is a matter of determining optimum process condition by routine experimentation with a limited number of species. In re Jones, 162 USPQ 224 (CCPA 1955)(the selection of optimum ranges within prior art general conditions is obvious) and In re Boesch, 205 USPQ 215 (CCPA 1980)(discovery of optimum value of result effective variable in a known process is obvious).

In reference to claim 9 and 11, the teachings of the prior art in combination with Schnur et al. teach the catalyst solution making a bonding reaction with the coupling agent; treating the patterned insulation layer with the catalyst-containing solution including making surfaces of the patterned insulation layer catalytically active, so that the electrically conductive material is deposited on the catalytically active surfaces of the patterned insulation layer.

Allowable Subject Matter

4. Claims 8 and 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

5. Papers related to this application may be submitted directly to Art Unit 2823 by facsimile transmission. Papers should be faxed to Art Unit 2823 via the Art Unit 2823 Fax Center located in Crystal Plaza 4, room 3C23. The faxing of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (15 November

Art Unit: 2823

1989). The Art Unit 2823 Fax Center number is **(703) 305-3432**. The Art Unit 2823 Fax Center is to be used only for papers related to Art Unit 2823 applications.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Julio J. Maldonado** at **(703) 306-0098** and between the hours of 8:00 AM to 4:00 PM (Eastern Standard Time) Monday through Friday or by e-mail via julio.maldonado@uspto.gov. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri, can be reached on (703) 306-2794.

Any inquiry of a general nature or relating to the status of this application should be directed to the **Group 2800 Receptionist** at **(703) 308-0956**.


Julio J. Maldonado

Patent Examiner

Art Unit 2823

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Signature of Julio J. Maldonado